3. *Elimination of Nitrogen from the Human Body.*—In commenting on Dr. Parkes's Croonian Lectures, the editor of the *Lancet* (May 20, 1871) remarks: "It seems well made out that, practically, all the elimination of nitrogen that takes place does so through two channels—those of the kidneys and of the bowels. The skin and the breath may be disregarded as channels for the elimination of nitrogen. Of the two modes of exit of nitrogen, by far the most important is the urine. Thus Ranke, with whose experiments Dr. Parkes's very closely agree, found, on experimenting on himself, that, with a mean entry of 17.91 grammes (176 grains) of nitrogen, 1.7 gramme (or 26.23 grains) passed by the bowels, and 18.2 grammes (or 281 grains) by the kidneys. In other words, on a regulated diet, more than the amount of nitrogen taken in the food can be recovered from the urine and feces. On a regulated diet there is a slight excess of nitrogen in the excreta over that of the food taken; which Dr. Parkes explains by saying that, on such a diet, there is a tendency to lose weight—a fact which would seem to carry the moral that we should not regulate ourselves by nice calculations in such matters, but eat according to well-ordered appetite.

"The point of the experiments of Parkes, as of Voit, Ranke, and others, is this—that the amount of nitrogen eliminated in health from the body, in the form of urea and other substances, is regulated by food, if not entirely, at any rate almost entirely. If the food taken is more nitrogenous, the excretion of nitrogen increases almost in exact proportion, and *vice versâ*. Exercise, mental or bodily, is comparatively unimportant in its effect. '*Within certain limits, the exit of nitrogen in healthy adults is governed by the entrance;*' in other words, the amount which passes out by the urine is regulated by that which passes in, and to a very small extent only by the muscular and nervous actions of the body itself. We have been in the habit of thinking that *work*, mental or bodily, was the great cause of variation in the amount of nitrogenous substances excreted; but exacter physiology seems to show that food, rather than work, determines the elimination. This, of course, within certain limits. Some urea is found in the urine even in cases of starvation, and in cases where nitrogen is withheld from the diet.

"Every practitioner will immediately recognize the practical importance of exact knowledge on this subject. In regard to pyrexia, to cases of cancer and other organic growth, to gout, to diabetes, saccharine and ureal, most important illustrations and suggestions have already been received from physiological chemistry; and it cannot be doubted that much more light will yet be thrown on these states. To take only one illustration given by Dr. Parkes—that of the state of pyrexia. We all know the high temperature of acute pneumonia, and the rapidity with which a patient loses weight and strength. Exact observations in physiological chemistry have given some explanation of these phenomena. 'Thus in a severe case of pneumonia the amounts of nitrogen going in and passing out were determined, and the degree of pneumonic consolidation estimated closely. From these data it was calculated that in five days 21 per cent. of the muscular tissue was destroyed; and, as this is supposed to constitute usually 45 per cent. of the whole body, it follows that more than 9 per cent., or one-eleventh part of the whole body, was destroyed and discharged in five days.' This piece of chemistry greatly enlarges our notions of the state of acute pneumonia, though we are still far from understanding the exact course of pathological events and processes. In what part of the system does the first step to acute pneumonia occur, leading not only to local consolidation, but to most extensive tissue change throughout the body? What is the relation of this tissue change to the local lesion of the lung and to the high temperature, and to more impalpable and recondite changes such as those indicated by the initiatory rigor, &c.? These are questions which still cannot be fully answered; enough seems known to connect the state of pyrexia, with its great ureal elimination while little food is being taken, with the rapid disintegration of nitrogenous tissues, especially muscles and nerves. In health, when food is being naturally taken and the weight of the body is preserved, there is an almost perfect quantitative correspondence between the entrance of nitrogen in food and its elimination. But in pyrexial disease, and to some extent perhaps in diseases that are not pyrexial, there occurs a great disproportion between the nitrogen taken in food and the nitrogen eliminated. Physiology and chemistry unite to show that this elimination takes place chiefly at the cost of the muscular and nervous tissues—or perhaps it would be more accurate to say at the expense of the muscular tissue when it has lost some nervous quality necessary to the preservation of its integrity.

"A most interesting part of this question still remains to be considered. We have said that all recent physiology tends to show that in health the increased action of muscles causes either no increase in the amount of urea eliminated or only a very slight increase. Moreover, urea is not found in muscles, as it would almost certainly be if it were formed in them. Where, then, is urea formed, if not in muscles? We will content ourselves with referring our readers to the proofs so ably and interestingly stated by Dr. Parkes, that the transformation of albumen into urea takes place in the cells of the glandular system, especially in the liver. We have more than once directed the attention of our readers to the discovery that urea is formed in the liver. Meissner's discovery has been confirmed by others. E. Cyon has shown that blood leaving the liver has much more urea in it than when it enters. Pathology, too, has given proof of the urea-forming function of the liver, by showing that withering and destruction of the liver-tissue is connected with an important diminution in the formation of urea. It is evident that, though our notions of the functions of the liver have been already greatly revolutionized by physiology, this organ must be regarded more than ever in our attempts to explain and treat disease. The vague but common states of biliousness, as well as of those graver forms of liver disease in which the patient dies comatose as if from uræmia, may receive elucidation from the discovery of the urea-forming function of the liver. These states may be connected with an excess of nitrogenous food which cannot be transformed into urea, and so loading and oppressing the system; or they may be induced by substances which chemically or physiologically interfere with the urea-forming function of the liver and other glands. At any rate, medical men must feel indebted to physiologists for disclosing the great fact, that the production of urea takes place certainly in the liver, and probably in other gastro-intestinal glands; and that the amount of it can be greatly controlled by having respect to the nature of the food given. Most physicians will agree with Dr. Parkes in thinking that these discoveries in physiology dictate the necessity of a reconsideration of the dietetic doctrines which have lately been prevalent in the profession, and especially that of the value of large quantities of nitrogenous food, either in pyrexial states or in states where the disposing and transforming power of the system or of its glands is temporarily in abeyance. 'I believe from experience,' says Dr. Parkes, 'though speaking with great reserve, that the almost exclusively animal diet sometimes given in fevers is not so useful in sustaining strength as is supposed; and that, if it were not for the loss of appetite which limits the supply, we should perceive more clearly the bad effects.' Dr. Parkes thinks that in fevers starches and fat should be used more freely."

4. *Function of the Spleen.*—Dr. MOSLER, in association with Dr. SCHINDELER, has been engaged in a series of experiments with the view of testing, if possible, the function of the spleen. The results of these experiments will shortly appear in a monograph on "The Pathology and Therapeutics of Leukæmia;" Dr. M. has, however, considered it advisable to make public, in anticipation of the appearance of the monograph, the results of thirty experiments in which ablation of the spleen was practised. This has been done in the *Centralblatt f. d. Med. Wissenschaften*, for May 13, 1871, No. 19. The results of the experiments are as follows:—

1. The existence of the spleen is nowise essential to the life of the animal.
2. After extirpation or artificially produced atrophy of the spleen the functions of the remaining lymphatic organs are increased in activity. The medulla of the bones, in the cases of the ablation of the spleen, is observed for a long time after to have undergone a remarkable change resembling leukæmia (*Neumann*). A hyperplastic condition of the lymph-glands is not always observed.
3. The vicarious activity of these glands, which would appear to be connected